

IDAHO NATIONAL ENGINEERING AND
ENVIRONMENTAL LABORATORY

INTEGRATED SAFETY MANAGEMENT SYSTEM
PHASE II VERIFICATION

FINAL REPORT
Volume I



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EXECUTIVE SUMMARY

The Department of Energy (DOE) commits to accomplishing its mission safely. To this end, contractors must integrate safety into management and work practices at all levels so that programs, processes, and objectives are achieved while protecting the public, the worker, and the environment. The contractor is required to implement an integrated safety management system in order to achieve the objective of doing work safely. To ensure these objectives are met, the Department issued a Safety Management System Policy 450.4 (P 450.4), and the DOE Acquisition Regulations (DEAR, 48 CFR 970.5204-2 and 970.5204-78).

This report documents the results of the review conducted to verify: (1) that the Idaho National Engineering and Environmental Laboratory (INEEL) Integrated Safety Management System (ISMS) Description (PDD-1004) has been implemented in the initial set of selected facilities; and (2) that the DOE Idaho Operations Office (DOE-ID) has implemented processes that integrate their safety activities and oversight with those of the INEEL ISMS. The general conduct of the review was consistent with the direction provided by the Under Secretary's Memorandum of March 1997, Protocol for Review and Approval of Documented Safety Management System Descriptions Associated with Defense Nuclear Facilities, and the Integrated Safety Management System Guide G 450.4-1.

This team was tasked with verifying that the approved ISMS Description had been implemented consistent with the P 450.4, DEAR 970.5204-2 and 970.5204-78, and the July 29, 1998 Contracting Officer's guidance and with providing a recommendation to the DOE-ID Manager concerning the ISMS implementation. Aspects of INEEL ISMS were previously reviewed as part of the 1998 accident investigation, the Phase I ISMS Verification, and the Independent Review of the Idaho Operations Office Preparations for Phase II Verification of its ISMS. Results documented in reports from those reviews provided valuable insight into the status of ISMS. Those reports were utilized by this Verification Team so that previously identified deficiencies were not simply repeated, but the current ISMS implementation was evaluated to determine if corrective actions from the previous reviews had been incorporated.

To conduct the review, the team was divided into three sub-teams organized around the Site Area/facilities within the scope of this review. The sub-teams were: Advanced Test Reactor (ATR), Radioactive Waste Management Complex/Waste Experimental Reduction Facility (RWMC/WERF), and Idaho Research Center/Transportation Complex (IRC/Big Shop). These teams conducted their reviews over a period of approximately three weeks on site. The reviews were conducted using Criteria and Review Approach Documents that were based on the core functions and guiding principles from the DOE policy and associated guide. Summaries of the reviews are contained in Appendix A with details in Volume II.

COMMENTS

The team found that the approved ISMS Description PDD-1004 has been implemented at ATR, WERF, IRC, and Big Shop. At RWMC, implementation progress was sufficient to meet five of the six objectives reviewed. The Operations objective was not met because additional progress is needed to demonstrate an appropriate level of rigor in execution of procedures and written

instructions. Only one of six criteria of the operations objective was not met; albeit that criterion is very important to the goal of ISMS to “do work safely”. Follow-up reviews of that objective area will be required. The Team also determined that DOE-ID has integrated their safety activities and oversight with those of the INEEL ISMS.

There are several mechanisms that were utilized by LMITCO that were noteworthy and should be institutionalized and continued by the new contractor. Of special note was the extensive and thorough process used for requirements flow down from the Company level documents described in PDD-1004 to the facility procedures. The contractor has performed an evaluation of the flow down of requirements as identified in List A/List B of the contract to the Company level documents and from the Company level documents to the facility procedures. Additionally, the contractor's company level and facility level SMEs completed a review of the implementation of their functional area requirements at the five facilities. This review added breadth and strength to the requirements flow down effort. This process could continue to be used effectively to ensure that facility procedures meet changing List A/List B requirements.

DOE efforts have been integrated with those of Lockheed Martin Idaho Technologies Company (LMITCO) under a common Project Office structure to further implementation of ISMS at INEEL. The Verification Team observed that the DOE-ID staff beyond the Office of Program Execution has become more involved and integrated as ISMS has been implemented. DOE-ID has demonstrated considerable progress in implementing ISMS using this project approach and they are moving to institutionalize their safety management system as they continue towards Phase II Verifications at the follow-on facilities. The basic mechanisms are in place to allow DOE-ID to transition out of the project approach upon completion of their follow-on verifications: an ISMS Description Document for DOE (ID G 450.E-1), the DOE-ID Functions, Responsibilities, and Authorities Manual, and the ID Directives System.

The DOE-ID self-assessment and independent assessment programs have also recently been put in place along with a strengthened quality assurance program per ID Orders 220.A, 220.B, and 414.1, respectively. DOE-ID senior management leadership will need to continue to fully implement and benefit from these programs.

It was clear to the Verification Team that senior line managers in both DOE-ID and LMITCO are engaged and leading efforts to implement ISMS at INEEL. The line managers in the facilities that were reviewed were positive with regard to the INEEL ISMS effort and were implementing ISMS consistent with senior management policy and direction. Line Managers are responsible for safety in the conduct of work in their facilities. The Plan of the Day meetings, Corrective Action Review Boards, Operational Safety Boards, and Site Operations Review Board are in place and being used effectively. DOE-ID line management demonstrated a strong presence in the facilities and ID personnel are active in overseeing the contractor's work.

The work force has enthusiastically welcomed the opportunity for increased participation in assuring their abilities to perform work safely. In most cases, rather than resisting the many changes, the workers demonstrated that they are accepting and actively participating in the implementation of the new work control processes under STD-101, MCP-3562, and MCP-3571. LMITCO has implemented a number of noteworthy mechanisms such as their Voluntary

Protection Program (VPP), the Worker Applied Safety Program (WASP), and the Company Employee Safety Team (CEST) to further their worker involvement safety principle. The new contractor will need to continue to foster this active worker involvement.

The team was concerned that the new processes will have to be monitored and reinforced in this initial set of facilities in order to fully complete the implementation progress demonstrated thus far. Pressures of contract transition and focus on the follow-on facilities may cause a relaxation in the efforts to institutionalize and improve the processes and work output in these initial five Site Area/facilities. The Executive Steering Group (ESG) must remain active and serve as a mechanism for senior management involvement in the oversight and direction for continued ISMS improvement. If the new contractor demonstrates strong ownership of the current ISMS Description PDD-1004 by the ESG, along with the line management roles and responsibilities and Site Steering Committees described in the Site Operations Document PDD-1005, then the new contractor will be able to smoothly transition out of the project approach upon completion of their follow-on verifications

CONCLUSIONS

Our recommendation to the DOE-ID Manager is that the INEEL ISMS Description PDD-1004 has been implemented at ATR, WERF, IRC, and Big Shop. At RWMC, implementation progress was sufficient to meet five of six objectives reviewed. The Operations objective was not met at RWMC where additional progress is needed to demonstrate an appropriate level of rigor in execution of procedures and written instructions. Only one of six criteria of the Operations objective was not met; albeit that criterion is very important to the goal of ISMS to “do work safely”.

Therefore, we recommend that the DOE-ID Manager direct a re-verification of the Operations objective at RWMC to be conducted separately or in conjunction with one of the follow-on Phase II verifications.

Our recommendation to the DOE-ID Manager is that DOE-ID has integrated their safety activities and oversight with those of the INEEL ISMS.

We also recommend that the DOE-ID Manager and the new contractor continue to use the project approach to implement the currently approved ISMS Description at the follow-on facilities and complete the Phase II verifications in FY2000.

NOTEWORTHY PRACTICES

LMITCO

Requirements Flowdown Processes. The mechanisms utilized to ensure the flowdown of List A and List B requirements into company procedures and processes and further into facility procedures and processes was extensive and thorough. The functional area SME validation of implementation of functional requirements at the facility level added strength and breadth to this flowdown process.

Employees Demonstrated Involvement. The employees are actively and aggressively involved in the hazard identification and control processes. The VPP program has provided significant impetus to ISMS by their involvement in employee safety communications, assessment and trending, and facility hazard walkdowns.

Facility Management Demonstrated Involvement. Facility Managers demonstrated an aggressive attitude towards all aspects of the ISM System and a strong sense of their responsibility for safety.

Utilization of Various Boards Adds a Major Contribution to ISMS. The various newly instituted safety boards (OSB, CARB, CAWG at RWMC, ALARA) were observed to be effective in ensuring integration and safety of operations. These boards are effective in supporting the company structure (ESG and SORB).

Effective Process for Prioritization, Coordination of Work. The facilities employed scheduling processes to prioritize, coordinate, and allocate resources and authorize work that were very effective.

Aggressive Configuration Management Initiative. The Configuration Management Program Initiative is considered to be a thorough, well-structured program. The effort to fully implement this program is (and will be) greatly assisted by the assignment of system engineers as primary owners of the designated systems and components.

Integration of Environmental Requirements into ISMS. Two notable examples of integration of environmental requirements are the integration of the environmental requirements into operating procedures at RWMC and WERF and the elimination of the majority of the hazardous waste streams at Big Shop.

DOE-ID

DOE-ID Line Management Involvement. DOE-ID demonstrated a positive attitude toward ISMS implementation, a strong sense of responsibility for safety, and good interaction between OPE and the contractor regarding the Integrated Safety Management System.

OPPORTUNITIES FOR IMPROVEMENT

LMITCO

Rigor and Discipline of Work is Lacking at RWMC. The team observed a breakdown in the execution of operational procedures and work orders at RWMC.

Integration of JSA Hazard Controls into Procedures and Work Orders. Examples were observed where the controls that were identified within the JSA process were not proceduralized nor were there mechanisms in place to ensure these controls would continue to be observed.

Identification of Roles and Responsibilities. The team observed areas where the roles and responsibilities were not well defined. Two examples of note were Waste Generator Services relative to the operations at WERF and identification of the responsibilities and accountabilities for execution of the requirements from the Radiological Controls manual that are not included within company procedures.

Authorization Basis for IRC. A formal authorization basis document for IRC would assist facility management and the IHRG during the facility safety evaluation of proposed research activities.

Computer Support for Work Control. Resources will be required to improve the reliability of the computerized hazard identification, hazard control development and work control system. The failure of this Site-wide system directly impacts the activity level Safety Management System.

Hazard Identification, Analysis & Control of Operational Activities Process Requires Continued Emphasis. The MCP-3562 process for operational procedures is just started at ATR and WERF. Senior Management must maintain focus and ensure appropriate resources continue to be applied to this important process.

DOE-ID

DOE-ID Independent and Self-Assessment Execution. DOE-ID has recently revised and established an independent and self-assessment program for DOE processes. Management attention will be required as these assessment processes mature.

Better Integration of DOE-OPE and DOE-LD. Better integration of DOE-OPE and LD activities will lead to better oversight of the implementation and execution of hazard controls during research activities.

1.0 INTRODUCTION

Department of Energy (DOE) Safety Management System Policy 450.4 (P 450.4), defines the expectations that DOE facilities will be operated in accordance with an Integrated Safety Management System (ISMS). The DOE Acquisition Regulations (DEAR, 48 CFR 970) further require that the Head Contracting Authority (Idaho Operations Office [ID] Manager) provide guidance to the contractor as to the expectations for the ISMS Description. The ID Manager guidance and expectations for the Idaho National Engineering and Environmental Laboratory (INEEL) were provided to the contractor by letter J. M. Wilcynski to W. John Denson, Subject: System Description Document Development and Implementation for Contract DE-AC07-94ID13223 (OPE-OS-98-041), dated April 2, 1998. This guidance was updated by letter J. M. Wilcynski to W. John Denson, Subject: Transmittal of Revised Contracting Officer Guidance On Integrated Safety Management System Description Document Development and Implementation for Contract DE-AC07-94ID13223 (OPE-OS-98-104) dated July 29, 1998.

In response to that direction, Lockheed Martin Idaho Technologies Company (LMITCO) submitted the proposed Safety Management System Description Document (PDD-1004, Revision 1) for approval on March 10, 1999, (Letter WJD-28-99). The ISMS Description Document (PDD-1004, Revision 2) was approved by the ID Manager on April 28, 1999 (Letter OPE-ISM-99-035) after successful completion of a Phase I ISMS Verification and successful incorporation of Verification Team comments. The current version of the approved ISMS Description Document is PDD-1004, Revision 3. On September 2, 1999, LMITCO declared that sufficient progress had been made to provide evidence of ISMS implementation in the initial set of five Site Area/facilities, and that they were ready for a Phase II ISMS Verification (Letter HTC-95-99).

Each site within DOE is to verify that the ISMS Description: 1) fulfills the expectations of the Head Contracting Authority and meets the requirements of the DEAR and the DOE Policy for Safety Management Systems; and 2) that the Description is implemented. The verification reviews are to be conducted in accordance with the protocol for the ISMS Verification process specified by Under Secretary of Energy Memorandum of March 1997, Protocol for Review and Approval of Documented Safety Management System Descriptions Associated with Defense Nuclear Facilities; and DOE G 450.4-1, Integrated Safety Management System Guide. As described in the Verification Protocol and the ISMS Guide, the ISMS Verification was conducted in two phases. The ISMS Verification Phase I was to verify the adequacy of the description and the ISMS Verification Phase II was to verify implementation of the ISMS. This report is for the ISMS Phase II Verification at INEEL.

The ID Manager appointed Joseph Arango as Team Leader for the ISMS Verification Phase II in her memorandum dated July 22, 1999 (Appendix III of the Review Plan in Volume II). The tasking memorandum specified the scope of the review and the desired deliverables. The Team Leader assembled and trained a 17 member team using personnel from DOE-ID, DOE Headquarters and other DOE sites in order to achieve a mix of expertise and experiences that resulted in a balanced review. The ISMS Verification Phase II Team was formed using a majority of members from the Phase I Verification Team at INEEL in order to maintain continuity and to capitalize on team members' knowledge of the INEEL ISMS from the review

of the description document. Since the focus of the Phase II Verification is on implementation, the Phase II Team membership was filled out with other individuals who are familiar with the conduct of work at the Site Areas and in the INEEL facilities. The ISMS Verification Phase II Team was organized into three review sub-teams:

Advanced Test Reactor (ATR),
Radioactive Waste Management Complex/Waste Experimental Reduction Facility
(RWMC/WERF), and
Idaho Research Center/Transportation Complex (IRC/Big Shop).

1.1 Purpose

The purpose for the INEEL ISMS Verification Phase II was to provide a recommendation to the ID Manager concerning implementation of ISMS, and to delineate areas, if any, in which implementation does not conform to the approved ISMS Description. In assessing the adequacy of the ISMS implementation, the Verification Team considered the results of previous reviews such as the ISMS Verification Phase I and the Type A Accident Investigation Team Report prepared following the July 1998 worker fatality.

1.2 Scope

The scope of the INEEL ISMS Verification Phase II included the ISMS for the following INEEL Site Area/facilities and activities managed and operated by LMITCO under Contract DE-AC07-94ID13223 and included the integration with the ID: Advanced Test Reactor (ATR), Radioactive Waste Management Complex (RWMC), Waste Experimental Reduction Facility (WERF), Idaho Research Center (IRC), and the Transportation Complex (Big Shop). Included within the scope of the ATR sub-team review was the implementation of ISMS at the ATR Criticality Facility (ATR-C) and the Nuclear Materials Inspection and Storage (NMIS) Facility. Within RWMC, ISMS implementation was assessed at the Subsurface Disposal Area (SDA), the Transuranic Storage Area (TSA) and the Administrative Area. Included within the TSA was the TSA Retrieval Enclosure (TSA-RE, WMF-636), the Stored Waste Examination Pilot Plant (SWEPP, WMF-610), the TRUPACT Loading Facility (WMF-618), the Type I Storage Module (WMF-635), and six Type II Storage Modules (WMF-628 through WMF-633). Within WERF, ISMS implementation was assessed at the Sizing and Compaction Facility (PER-622), and the Incineration Facility (PER-609). Within the scope of the review at IRC (including the IRC Laboratories IF-602 and IF-603), the sub-team assessed ISMS implementation at the Physics Lab (IF-638), the Battery Facility (IF-605), the INEEL Engineering Demonstration Facility (IEDF, IF-657), the IRC Chemical Storage Facility (IF-655), the System Analysis Facility (SAF, IF-627), and the SAF Lab (IF-611). Within the scope of the review for the Big Shop were the Transportation Facility (CFA-696) including the associated LNG Dispensing Facility and Propane Dispensing Facility. Other INEEL Site Areas and facilities were excluded from the scope of this review.

The ISMS Verification Phase II evaluated the adequacy of ISMS implementation as compared to the approved ISMS Description. In assessing the adequacy of the ISMS implementation, the ISMS Verification Team considered how the described site-wide corporate system was

coordinated and flowed “downward” to the individual facility and work processes and how, at the facility level, the applicable requirements were identified and implemented. At the facility or process level, the mechanisms, which identify, evaluate, control and assess individual work items, were assessed as key indicators of the adequacy of the implementation. The review assessed the adequacy of the programmatic documentation at the facility level. Integration between LMITCO and ID and the integration within LMITCO from the site-wide to the process specific implementation were reviewed. By reviewing supporting documents, interviewing individuals within the facilities, and observing the accomplishment of selected work processes, the ISMS Verification Team was able to draw conclusions as to the adequacy of the ISMS implementation. The scope of the review at INEEL included all eight ISMS Core Expectations (Appendix II of the Review Plan in Volume II) included in the ISMS Verification Team Leader’s Handbook, which resulted in evaluation of the core functions and guiding principles for Integrated Safety Management as defined in the DOE P 450.4.

1.3 Overall Approach

The ISMS Verification Team reviewed the ISMS implementation in the selected Site Area/facilities at INEEL. The Verification Team evaluated the progress and effectiveness of the implementation efforts against the guiding principles and core functions defined in DOE P 450.4. Based on this assessment, the ISMS Verification Team drew conclusions in support of the recommendation to the ID Manager as to whether the ISMS implementation is achieving the overall objective of Integrated Safety Management, which is described as follows:

"The Department and contractors must systematically integrate safety into management and work practices at all levels so that missions are accomplished while protecting the public, the worker, and the environment. This is to be accomplished through effective integration of safety management into all facets of work planning and execution. In other words, the overall management of safety functions and activities becomes an integral part of mission accomplishment."

1.3.1 Sequence of Activities

The first step in the ISMS Verification process was to provide training and interaction among the team members to ensure an adequate understanding of the DOE ISMS Policy expectations, the specific INEEL ISMS Description, and the plan and strategy for the review. The Team Leader ensured that the team had been trained on DOE Acquisition Regulations 970.5204-2, "Integration of Environment, Safety, and Health into Work Planning and Execution" and 970.5204-78, "Laws, Regulations, and DOE Directives". As a final action of this initial effort, the team completed preparation of the Criteria and Review Approach Documents (CRADs) which guided the review. The final CRADs are attached in Volume II of this report as part of the Review Plan. The indoctrination period of about four days, including CRAD development and some initial briefings, was conducted at the INEEL a week or two prior to the start of the ISMS Verification Phase II. This initial period was utilized by DOE-ID and LMITCO to provide ISMS presentations and briefings to update the Verification Team on implementation progress since the ISMS Phase I Verification.

The ISMS Verification Phase II review was concluded during two-week periods following preparation of the Review Plan, development of the CRADs, and completion of the team indoctrination. The review consisted of additional Site Area/facility specific briefings from LMITCO and ID to the team during the first week, as well as interviews, observations, and document reviews. The second week was used to complete the interviews, observations, and documentation reviews, as well as the completion of the Assessment Forms, the preparation of the Final Report and related activities.

1.3.2 Completion of the Assessment Forms

During the second part of the verification review, the team members completed their evaluation of the criteria in the individual CRADs that supported conclusions as to whether the individual objectives had been met. The evaluation of the criteria was based on the presentations coupled with the interviews, observations, and documentation reviews conducted during the two-week period. An important input to all efforts was the observations and discussions with individuals within the facilities who explained and defended their ISMS at their individual levels of responsibility. Records of the evaluations are found on the Assessment Forms. An Assessment Form was prepared for each Objective in the CRADs, which documents the basis for the conclusions reached concerning the objective and criteria. Each Assessment Form concludes with a set of numbered issues or observations that are rolled up to "Opportunities for Improvement" in the Executive Summary of this report. Issues identified during the review of the individual CRAD which warranted the attention of the ID Manager or senior LMITCO management are included in the "Opportunities for Improvement" and supported by additional detail on the Assessment Forms. Good practices and strengths of the ISMS are identified as "Noteworthy Practices" in the Executive Summary. The completed Assessment Forms are included in Volume II of this report.

1.3.3 LMITCO and DOE-ID Preparations

The responsible LMITCO and ID Managers presented their implementation of ISMS, consistent with the approved ISMS Description Document, to the team so that a basis for interviews, observations and further document reviews could be formed. It was important that the individual Managers had an understanding of the expectations of the ISMS Verification Phase II and had an understanding of the ID expectations for ISMS implementation. The ISMS Verification Team Leader and the team members made every effort to enhance the understanding of the LMITCO Managers of their expectations.

The briefings consisted of LMITCO and ID making presentations to the Team to describe how the approved ISMS Description had been implemented consistent with DOE P 450.4, the ISMS DEAR clauses, and the requirements of the ID Manager. The briefings included identification and a brief description of supporting program and process documents at the Site Area/facility level, as well as any self-identified gaps in the ISMS implementation plans. These presentations also described the integration of safety management between LMITCO and ID, and within LMITCO at the Site Area/facility level. At the conclusion of the presentations, the ISMS Verification Phase II Team reviewed documentation, interviewed selected personnel, observed work processes, and completed the other necessary actions to support the review.

1.3.4 Process for ISMS Review

The ISMS Verification Phase II Team reviewed ISMS implementation at the first five Site Area/facilities that have implemented the approved ISMS Description at INEEL. The remaining INEEL Site Area/facilities are implementing ISMS in a phased approach and are expected to undergo future verifications.

The CRADs are identified by functional area and were used by each of the three sub-teams to form a common basis for the review. The functional areas were Hazards Identification and Standards Selection (HAZ), Management (MG), Operations (OP), and DOE-ID (DOE).

The ATR sub-team reviewed how the site-wide ISMS is coordinated and integrated into the individual work processes within the Advanced Test Reactor, a Hazard Category 1 nuclear facility. This included a review of the integration with ID under the terms and conditions specified in the approved authorization agreement.

The RWMC/WERF sub-team addressed the ID and LMITCO team processes for the safe accomplishment of work in the Radioactive Waste Management Complex Site Area as well as in the Waste Experimental Reduction Facility. This entailed a review of work processes for Hazard Category 2 nuclear facilities as well as non-nuclear, radiological and other industrial facilities.

The IRC/Big Shop sub-team reviewed the ISMS implementation for research work in the Idaho Research Center facilities as well as industrial work at Big Shop within the Central Facilities Site Area.

Two of the sub-teams also addressed one of a selected set of specific crosscutting areas using the Subject Matter Expert (SME) CRAD. The SME CRAD was utilized to assess whether the core functions and guiding principles of ISM are met for the control of work within the specific disciplines of radiation protection and configuration management. Even for the sub-teams not utilizing a particular SME CRAD, the radiation protection and/or configuration management areas were reviewed using criteria from the OP and MG CRADs.

In addition, the evaluation of maintenance and work control was considered by all of the sub-teams using the OP CRAD since this discipline normally demonstrates the essence of safely conducting work. Likewise, quality assurance and training and qualification areas were evaluated by all sub-teams using criteria from the DOE and MG CRADs.

1.3.5 Meetings and Presentations

Part one of the review included presentations by LMITCO and ID to the ISMS Verification Phase II Team. The purpose for the presentations was to provide an opportunity for the team to be updated with the implementation progress since the ISMS Description was approved. The presentations provided an opportunity for LMITCO and ID to explain the manner in which the elements of ISM described in the various programs are implemented at the Site Area/facilities level resulting in an ISMS which fulfills the expectations for DOE P 450.4 and the DEAR requirements. The ISMS Verification Phase II Team utilized the information provided during

the presentations as a basis to proceed with the verification that the criteria and the objectives in the individual CRADs were met. Additional interviews, record reviews, observations, and other activities at the Site Area/facilities level formed the majority of the review effort.

The INEEL ISMS Verification Phase II was an open process with the goal of maximizing the opportunity to achieve a full understanding of the ISMS implementation. This in turn resulted in an accurate assessment of the progress and status of implementation and a recommendation to the ID Manager. In order to achieve the level of openness and coordination which was desired, the team met daily to discuss observations and issues. Site personnel attended these meetings in limited numbers as observers. The Team Leader and Advisor met, as necessary, with senior LMITCO and ID management to ensure that they were fully informed of the progress and issues during the ISMS Verification Phase II. Contractor and ID personnel were given preliminary copies of the CRAD evaluations for a factual accuracy check and revisions were made, as appropriate.

Following the review portion of the ISMS Verification Phase II, the Team Leader conducted an outbrief with LMITCO and ID Managers as well as appropriate Site Area/facilities personnel. The briefing included the results of the review, the basis for the recommendation that was made to the ID Manager concerning ISMS implementation, and a summary of strengths and issues that arose during the review.

2.0 ASSESSMENT OF INEEL ISMS

This section provides a summary of the ISMS Verification results for both DOE-ID and LMITCO. This review focused on the facility and work process levels, with emphasis on noted deficiencies or recommendations relative to the five functions of ISMS described in P450.4. More detailed summaries for each sub-team are included in Appendix A. The safety management functions provide the essential framework for evaluating line management's performance in implementing an effective safety management program, identifying the requirements that apply to work processes, and ensuring that the necessary analysis and controls have been implemented to ensure that work can be performed safely and in an environmentally sound manner.

The following noteworthy practices and opportunities for improvement were general in nature, and apply to the overall function and improvement of the ISMS.

Noteworthy Practices:

LMITCO Facility Managers demonstrated an aggressive attitude towards all aspects of the ISM System and a strong sense of their responsibility for safety.

DOE-ID line management demonstrated a positive attitude toward ISMS implementation, a strong sense of responsibility for safety, and good interaction between OPE and the contractor regarding the Integrated Safety Management System.

The Configuration Management Program Initiative is considered to be a thorough, well-structured program. The effort to fully implement this program is (and will be) greatly assisted by the assignment of system engineers as primary owners of the designated systems and components.

Opportunities for Improvement:

The team observed areas where roles and responsibilities were not well defined. Two examples of note were Waste Generator Services relative to the operations at WERF and identification of the responsibilities and accountabilities for execution of the requirements from the INEL Radiological Control Manual that are not included within company procedures.

Define the Scope of Work: Missions are translated into work, expectations are set, tasks are identified and prioritized, and resources are allocated.

An effective process existed for identifying and prioritizing mission-related tasks, modifications, and work, in accordance with the mechanisms of the INEEL ISMS. While some of the mechanisms have only recently been implemented, efforts to integrate the implementation were apparent and continued use of these processes and associated feedback mechanisms will produce continued improvements. Active and continuous management attention on work identification, planning and prioritizing was clearly evident. This resulted in positive control of work scope and resource allocations during both routine operations and maintenance. It was noted that the RWMC has difficulty in planning and scheduling of resources beyond several days or weeks.

The scope of maintenance activities was well documented on work control forms and packages. The scope of operational activities was well documented in operating procedures. The meetings observed at the five facilities assessed (for example, POD, OSB, CAWG, post-job reviews, shift turnover) were very effective in reviewing and analyzing scope of work.

DOE-ID, including the DOE line organization, systematically translated missions into work, set expectations, issued written program execution guidance, identified and prioritized tasks, and allocated resources within the context of the ISMS.

Noteworthy Practices:

The mechanisms utilized to ensure the flowdown of List A and List B requirements into company procedures and processes and further into facility procedures and processes was extensive and thorough. The functional area SME validation of implementation of functional requirements at the facility level added strength and breadth to this flowdown process.

The facilities employed scheduling processes to prioritize, coordinate, and allocate resources and authorize work that were very effective.

Analyze the Hazards: Hazards associated with the work are identified, analyzed and categorized.

The hazards analysis process at the five facilities adequately controlled hazards to workers, the environment and the public. This process conformed to the Authorization Basis standards and DOE expectations through a systematic flowdown of requirements into implementing processes and procedures. The process utilized to ensure all required company requirements were included in the facility documentation was comprehensive and thorough. Of particular strength was the use of a Core Safety Assurance Package for each operating cycle of the ATR and the use of an Experiment Safety Analysis Package to ensure each experiment has established limits and stays within the approved safety envelope.

There was adequate specification and implementation of controls for the identification, analysis and categorization of hazards for both maintenance and operational activities. Work packages were prepared in accordance with STD-101 and adequately addressed the identified hazards. An observed weakness involved less than complete integration of environmental considerations for routine maintenance items at the ATR. An effective process, MCP 3562, has recently been instituted to analyze hazards for operational activities. However, most of the operational procedures at ATR and WERF had not yet been fully analyzed under MCP-3562 for hazards, including the primary procedure used for waste incineration. Additional management attention must ensure that sufficient resources are provided for this effort at ATR in light of the contractor transition.

IRC utilized the Independent Hazard Review process to evaluate the hazards associated with proposed research activities. While the process seemed to be working well, it could be strengthened with the inclusion of a safety analyst on the review panel.

The DOE-ID line organization guided and provided oversight to the hazard identification, analysis, and categorization process in accordance with DOE requirements.

Noteworthy Practices:

The employees are actively and aggressively involved in the hazard identification and control processes. The VPP program has provided significant impetus to ISMS by their involvement in employee safety communications, assessment and trending, and facility hazard walkdowns.

Opportunities for Improvement:

The process for hazard identification, analysis and control of operational activities has just started at ATR and WERF. Senior Management must maintain focus and ensure appropriate resources continue to be applied to this important process.

Develop and Implement Hazard Controls: Applicable standards and requirements are identified and agreed-upon, controls to prevent/mitigate hazards are identified, the safety envelope is established, and controls are implemented.

Adequate implementation and integration of hazard controls in work control processes was observed at the five INEEL facilities evaluated. Work planners were well qualified and have developed effective tools to ensure consistency in specifying mitigation controls for the

identified hazards. Results from the Hazard Identification and Mitigation (HIM) process were incorporated into the instructions of work orders. JSAs for many of the operational procedures had not yet been developed. An opportunity for improvement exists for the integration of hazard controls with the text of procedures. Multiple walkdowns are conducted for maintenance work to validate the hazards and conditions. Walkdowns are also conducted for the development of operational procedures. Worker and crafts indicated that their participation during the job-planning process, walkdowns of work sites, and pre-job briefs has significantly enhanced work control.

Other mechanisms used to develop and implement hazard controls include the Operational Safety Board review, SME reviews, and post-job reviews. Environmental permit conditions/requirements have been utilized as controls that mitigate potential hazards to the environment at the RWMC and WERF. The ALARA Program and Radiation Work Permit provided a framework for incorporating controls into work that involved exposure to radiation and radioactive material.

The Independent Hazard Review Group (IHRG) process was implemented for safety review and approval of research and development activities. Approvals for initiating research activities are contingent on verification by the researcher that the controls specified through the IHRG review have been implemented. Implementation is also spot-checked by the laboratory custodian and by the IRC Facility Manager. An opportunity for improvement of the authorization process at the IRC would be the establishment of a formal authorization basis document that better defines the safety criteria that individual research projects must comply with for IHRG approvals.

DOE assesses hazard controls and implementation efficacy through self assessments, line-management assessments of contractor performance, and independent assessments.

Noteworthy Practices:

Two notable examples of integration of environmental aspects into work planning and execution were the integration of the environmental requirements into operating procedures at RWMC and WERF and the elimination of the majority of the hazardous waste streams at Big Shop.

Opportunities for Improvement:

Examples were observed where controls that were defined within the JSA process were not proceduralized nor were there mechanisms in place to ensure these controls would continue to be observed.

A formal authorization basis document for IRC would assist facility management and the IHRG during the facility safety evaluation of proposed research activities.

Perform Work within Controls: Readiness is confirmed and work is performed safely.

A strong commitment was expressed by the workforce at all levels to perform work safely. All facilities demonstrated effective process controls for confirmation of facility readiness and for

authorization of work. Hazard controls, although not fully integrated into operational procedures and work orders, were reliably communicated to operators and craft personnel. “Stop Work” authority was continually re-emphasized to the workers by the Foremen. With a few specific exceptions, training of employees was adequate to support expected performance levels. Contractor environment, safety, health, and quality assurance (ESH&QA) professionals, along with facility management, provided on-going oversight of activities to assess ESH&QA performance. Adding to the assurance of employee safety was the positive attitude of the contractor management and staff, who appeared to be continually working to improve safety conditions.

DOE-ID ISMS processes were implemented for line management oversight of facility programs and the day-to-day operational oversight. Facility Directors, Deputy Facility Directors, Facility Representatives (FRs) and Facility Engineers (FEs) were adequately involved in the oversight of contractor operations. DOE-ID was in the process of completing the development and implementation of the upgraded ISMS documentation in areas such as Configuration Management (CM), Quality Assurance (QA), and the DOE-ID Directives System. While all of these DOE-ID development efforts had not been completed, the existing contractor mechanisms were judged to be adequate.

DOE-ID OPE and LD have a memorandum of agreement that specifies a split of line-management responsibilities for ISMS functions for IRC. For ES&H oversight activities, LD involvement needs to be strengthened to achieve true integration of the ISMS core functions, and OPE oversight also needs to be enhanced.

Work execution practices were judged to be satisfactory at four of the five facilities evaluated. In most cases, operators and crafts performed work in accordance with written instructions and observed the written hazard control requirements faithfully. However, employees and facility management at RWMC displayed a lack of rigor and discipline in the execution of written work instructions. Although five of the six criteria for the operations objective were met at RWMC, the severity of the deficiency in one of the criteria represented an unacceptable threat to the ISMS process and worker safety. Accordingly, the operations objective was not met for RWMC.

Opportunities for Improvement:

The team observed a breakdown in the execution of operational procedures and work orders at RWMC.

Resources will be required to improve the reliability of the computerized hazard identification, hazard control development and work control system. The failure of this Site-wide system directly impacts the activity level Safety Management System.

Better integration of DOE-OPE and LD activities will lead to better oversight of the implementation and execution of hazard controls during research activities.

Provide Feedback and Continuous Improvement: Feedback information on the adequacy of controls is gathered, opportunities for improving the definition and planning of work are

identified and implemented, line and independent oversight is conducted, and, if necessary, regulatory enforcement actions occur.

Procedures and mechanisms were in place at the five facilities assessed to collect feedback information, including self-assessments, independent assessments, post-job reviews, performance measures and indicators, lessons learned, employee safety suggestions and concerns, and occurrence reports. Issues, nonconformances, and deficiencies were generally included in the ICARE system, where site-wide tracking, closure and lessons-learned development occurred.

Management boards (i.e., Corrective Action Working Group, Corrective Action Review Board) were very effective tools for effecting rigorous program implementation and improvements.

With the exception of the Big Shop and IRC, the facilities assessed employ the Unreviewed Safety Question process to maintain facility authorization basis documentation current. The USQ process generally utilized an integrated team effort to ensure comprehensive and objective reviews were performed.

DOE-ID action was still in progress to improve areas such as Quality Assurance (QA), DOE-ID Self-Assessment and DOE-ID Issues Management. The DOE-ID OPE Self-Assessment process guidance was provided through the OPE Operational Excellence Program Manual and recently approved DOE-ID directives. There has not yet been sufficient time to demonstrate the execution of this process.

Noteworthy Practices:

The various newly instituted safety boards (OSB, CARB, CAWG at RWMC, ALARA) were observed to be effective in ensuring integration and safety of operations. These boards are effective in supporting the company structure (ESG and SORB).

Opportunities for Improvement:

DOE-ID has recently revised and established an independent and self-assessment program for DOE processes. Management attention will be required as these assessment processes mature.

3.0 CONCLUSIONS AND RECOMMENDATION

The conclusion of this ISMS Verification Team is that the INEEL ISMS Description PDD-1004 has been implemented at ATR, WERF, IRC, and Big Shop. At RWMC, implementation progress was sufficient to meet five of the six objectives reviewed. The Operations objective was not met because additional progress is needed to demonstrate an appropriate level of rigor in execution of procedures and written instructions. Only one of six criteria of the Operations objective was not met; albeit that criterion is very important to the goal of ISMS to “do work safely”. Follow-up reviews of that objective area will be required. The Team also determined that DOE-ID has integrated their safety activities and oversight with those of the INEEL ISMS.

There are several mechanisms that were utilized by LMITCO that were noteworthy and should be institutionalized and continued by the new contractor. Of special note was the extensive and thorough process used for requirements flow down from the Company level documents described in PDD-1004 to the facility procedures. The contractor has performed an evaluation of the flow down of requirements as identified in List A/List B of the contract to the Company level documents and from the Company level documents to the facility procedures. Additionally, the contractor's company level and facility level SMEs completed a review of the implementation of their functional area requirements at the five facilities. This review added breadth and strength to the requirements flowdown effort. This process could continue to be used effectively to ensure that facility procedures meet changing List A/List B requirements.

DOE efforts have been integrated with those of Lockheed Martin Idaho Technologies Company (LMITCO) under a common Project Office structure to further implementation of ISMS at INEEL. The Verification Team observed that the DOE-ID staff beyond the Office of Program Execution has become more involved and integrated as ISMS has been implemented. DOE-ID has demonstrated considerable progress in implementing ISMS using this project approach and they are moving to institutionalize their safety management system as they continue towards Phase II Verifications at the follow-on facilities. The basic mechanisms are in place to allow DOE-ID to transition out of the project approach upon completion of their follow-on verifications: an ISMS Description Document for DOE (ID G 450.E-1), the DOE-ID Functions, Responsibilities, and Authorities Manual, and the ID Directives System.

The DOE-ID self-assessment and independent assessment programs have also recently been put in place along with a strengthened quality assurance program per ID Orders 220.A, 220.B, and 414.1, respectively. DOE-ID senior management leadership will need to continue to fully implement and benefit from these programs.

It was clear to the Verification Team that senior line managers in both DOE-ID and LMITCO are engaged and leading efforts to implement ISMS at INEEL. The line managers in the facilities that were reviewed were positive with regard to the INEEL ISMS effort and were implementing ISMS consistent with senior management policy and direction. Line Managers acknowledge and take seriously their responsibility for safety in the conduct of work in their facilities. The Plan of the Day meetings, Corrective Action Review Boards, Operational Safety Boards, and Site Operations Review Board are in place and being used effectively. DOE-ID line management

demonstrated a strong presence in the facilities and ID personnel are active in overseeing the contractor's work.

The work force has enthusiastically welcomed the opportunity for increased participation in assuring their abilities to perform work safely. In most cases rather than resisting the many changes, the workers demonstrated that they are accepting and actively participating in the implementation of the new work control processes under STD-101, MCP-3562, and MCP-3571. LMITCO has implemented a number of noteworthy mechanisms such as their Voluntary Protection Program (VPP), the Worker Applied Safety Program (WASP), and the Company Employee Safety Team (CEST) to further their worker involvement safety principle. The new contractor will need to continue to foster this active worker involvement.

The team was concerned that the new processes will have to be monitored and reinforced in this initial set of facilities in order to fully complete the implementation progress demonstrated thus far. Pressures of contract transition and focus on the follow-on facilities may cause a relaxation in the efforts to institutionalize and improve the processes and work output in these initial five Site Area/facilities. The Executive Steering Group (ESG) must remain active and serve as a mechanism for senior management involvement in the oversight and direction for continued ISMS improvement. If the new contractor demonstrates strong ownership of the current ISMS Description PDD-1004 by the ESG, along with the line management roles and responsibilities and Site Steering Committees described in the Site Operations Document PDD-1005, then the new contractor will be able to smoothly transition out of the project approach upon completion of their follow-on verifications.

Recommendations

We recommend that the DOE-ID Manager direct a re-verification of the Operations objective at RWMC to be conducted separately or in conjunction with one of the follow-on Phase II verifications.

Also, we recommend that the DOE-ID Manager and the new contractor continue to use the project approach to implement the currently approved ISMS Description at the follow-on facilities and complete the Phase II verifications in FY2000.

4.0 LESSONS LEARNED

To understand the items identified in this review, they must be understood in light of the method of this Phase II review. This team of 15 verifiers conducted a Phase II review of a set of five Site Area/facilities at INEEL. In an effort to provide focused review of the facilities, the team was organized into three sub-teams each of which focused on groups of facilities. The CRADs identified in the Verification Team Leader's Handbook were edited into five composite CRADs. Each sub-team used the full set of these CRADs for the facilities they were assigned, which provided consistency among the three sub-teams.

The plan was for each sub-team to review their assigned facilities for four or five days and to write the report in four or five days. The planning included a meeting of all three sub-teams

daily to allow information flow between the three sub-teams. However, the ATR sub-team started a week before the other two sub-teams. As a result, only a limited flow of information occurred between the ATR sub-team and the other sub-teams. Additionally, one facility was in Idaho Falls while the other facilities were at the site. This resulted in the sub-teams using a speaker telephone to participate in the daily meeting. With this background the following are the lessons of this review:

- The staggered review and the distance between facilities prevented good information flow between sub-teams and between team members assigned similar CRADs. The telephone connection was satisfactory but other processes should be considered.
- The number of members on each sub-team (5) was at a minimum. An additional member to assist in the review of the Operations and Maintenance area would have been useful. This review was successful because of the extra hours worked by team members.
- The sub-teams that were required to verify two facilities chose to review one facility early in the week and have the complete sub-team shift to the second facility later in the week. This seemed to work well, but future team leaders may consider setting time aside to do the initial assessment form write-ups before the second facility is started.
- Despite extra effort that was put into the training of personnel on this team, there were members that did not understand the format and information required on the Assessment Form and did not understand the effect of an issue on the overall evaluation. Team leaders cannot over emphasize this training.
- Portable computers were made available to the team. However, problems with access to printers prevented exchanging hard copies between team members.
- The staggered review caused the Team Leader and the Senior Advisor to be involved in reviewing the ATR sub-team's report which prevented them from being actively involved during early review portions of the second group of verifications.
- By requiring the team to write the Assessment Forms to the criteria rather than to records, interviews, and observations, the Discussion of Results section was more succinct and easier to understand the performance relative to specific criteria.

Despite these issues, this method of verification can be effectively utilized. For a site or an area with a high number of closely associated facilities, the traditional functional subject area approach should be used. The approach used here could be utilized where the identified facilities have different functions and/or management rules and directives.

APPENDIX A
Sub-Team Summaries

APPENDIX A

Sub-Team Summaries

ADVANCED TEST REACTOR (ATR)

The ISMS Verification Team recognized that ATR has made notable progress in the implementation of a considerable number of new and improved ISMS procedures and processes that have recently been put in place by both DOE-ID and LMITCO. However, continued vigilance by both DOE-ID and the new M&O Contractor, transitioning on October 1, 1999, will be essential to the continued success of ISMS for the ATR, the other facilities completing ISMS Phase II Verification now, and the balance of the INEEL Site.

Define the Scope of Work

The review of documentation, combined with interviews and observations, indicated that ATR has a mature and effective process for identifying and prioritizing mission-related tasks, modifications and work, in accordance with the mechanisms of the INEEL ISMS. Active and continuous management attention on work identification, planning and prioritizing is clearly evident. This results in positive control of work scope and resource allocations during both routine operations, maintenance, and reactor outages at ATR. In the document control area, sub-contracted support services are currently needed to respond to the large number of document changes caused by implementation of ISMS. Special management attention is required to ensure that sufficient resources continue to be provided during the change of M&O contractors. The scope of maintenance activities is well documented on work control forms and packages. The scope of operational activities is well documented in operating procedures. The TRA Daily Schedule and the Plan of the Day (POD) Meetings are exceptionally effective.

DOE-ID TRA is actively and adequately involved in the preparations for work, the confirmation of readiness prior to authorizing operations, and the execution of the work. DOE-ID TRA provides consistent oversight of the work processes. The DOE-ID TRA is organized such that the Facility Director (FD) is also the DOE TRA Program Manager and Contracting Officer's Representative (COR). This works well for this organization. The positive spirit of the DOE-ID TRA organization to ISMS, their demonstrated teamwork with the TRA contractor personnel, and the strong sense of line management responsibility for safety at TRA are substantial strengths.

Analyze the Hazards

The hazards analysis process at the ATR facility adequately controls hazards to workers, the environment and the public. This process conforms to the Authorization Basis standards and DOE expectations through a systematic flowdown of requirements into implementing processes and procedures. The process utilized to ensure all required company requirements were included in the facility documentation was comprehensive and thorough. The list of Authorization Basis documents is properly incorporated into current, approved Authorization Agreements. The Authorization Basis documents are effectively maintained through the use of a mature Unreviewed Safety Question process. Of particular strength is the use of a Core Safety

Assurance Package for each operating cycle of the ATR and the use of an Experiment Safety Analysis Package to ensure each experiment has established limits and stays within the approved safety envelope.

There is adequate specification and implementation of controls for the identification, analysis and categorization of hazards for both maintenance and operational activities. Responsible individuals prepare a Hazard Profile Screening Checklist and also review the Facility Hazards List, and other applicable hazards databases. A plan for integrating the numerous additional databases of hazards at INEEL is being implemented by the TRA ES&H Manager to ensure that the large and growing number of hazards lists are coordinated, used correctly, and maintained up to date. Work packages are prepared in accordance with STD-101 and adequately address the identified hazards. An observed weakness involved less than complete integration of environmental considerations for routine maintenance items. The newly instituted computerized maintenance management system has experienced instability on the contractor's Intranet, causing delays in work package preparation. An effective process, MCP 3562, has recently been instituted to analyze hazards for operational activities.

Develop and Implement Hazard Controls

The review of documentation, coupled with interviews and observations, indicated the adequate implementation and integration of hazard controls in work control processes at ATR under the INEEL ISMS. The implementation of hazard controls for maintenance work is managed by the Test Reactor Area Maintenance Organization (TRAMO) which uses a computerized system to prepare work packages. Work Planners are well qualified and have developed effective tools to ensure consistency in specifying mitigation controls for the identified hazards. Job Safety Analysis (JSA) requirements are adequately incorporated into detailed work packages. JSAs developed for operational activities are incorporated into detailed operating procedures. Multiple walkdowns are conducted for maintenance work to validate the hazards and conditions. Walkdowns are also conducted for the development of operational procedures. Worker and crafts indicated during interviews that their participation during the job-planning process, walkdowns of work sites, and pre-job briefs is significantly enhancing work control.

The implementation of hazard controls for facility modification and construction is implemented through the configuration management program. All facility changes are governed by the configuration management control procedures. Primarily the plant/experiments systems engineers who are designated primary owners and ensure modifications meet the design basis requirements execute these procedures. The engineering change form (ECF) governs appropriate execution of these procedures for plant systems or the computer change form (CCF) for computer systems and software.

DOE-ID TRA oversight of the maintenance of the contractor's Authorization Basis (AB), the analysis of hazards, the implementation of tailored safety standards and requirements, and implementation of the hazard mitigation programs and controls is adequate for ATR/ATRC/NMIS. DOE-ID TRA organization has sufficiently implemented their processes to meet their responsibilities for oversight of both of the ISMS Core Functions to analyze hazards, and develop and implement hazard controls.

Perform Work Within Controls

A strong commitment was expressed by the workforce at all levels to perform work safely. A well-defined training program for operators at the ATR is in place. A systematic approach to training is employed, using job analyses to identify work tasks and classifications. Functional problems associated with the conversion of the TASKMASTER database (used to store revised job task information and identify lesson plans) to Windows need to be resolved.

All work packages currently require the approval of the Site Area Director (SAD) to proceed. Work may not proceed until authorized by Operations. “Stop Work” authority is continually re-emphasized to the workers by the Foremen. If work cannot proceed as described in the work package, work is halted until the issues are resolved. Operational activities are performed in accordance with detailed, mature procedures. The ATR Shift Supervisor is required to sign off that prerequisites for the activity have been met. Pre-job briefings are also required for operational activities. A Senior Supervisory Watch (SSW) program has been initiated to provide transition control of work order packages developed and performed in accordance with STD-101 during implementation of the INEEL ISMS and Voluntary Protection Program (VPP).

DOE-ID TRA ISMS processes are implemented for line management oversight of the ATR/ATRC/NMIS facility programs and the day-to-day operational oversight. The Facility Director, Deputy Facility Director, Facility Representatives (FRs) and Facility Engineers (FEs) are adequately involved in ATR/ATRC/NMIS operations.

DOE-ID is now completing the development and implementation of the upgraded ISMS documentation in areas such as Configuration Management (CM), Quality Assurance (QA), and the DOE-ID Directives System. While all of these DOE-ID development efforts are not yet done, the existing mechanisms at TRA are adequate for ATR/ATRC/NMIS.

Provide Feedback and Continuous Improvement

Feedback and improvement processes were embedded throughout the ATR ISMS and were effective. Feedback and improvement is adequately integrated and formalized through: self-assessments, occurrence reporting, required continuous monitoring against performance objectives by managers, scheduled external reviews, unreviewed safety question process, maintenance post-job reviews, post-outage critiques, operating procedure walkdowns, a series of management review boards focused on different areas, employee suggestions, the SSW program, and rigorous document upgrading and control procedures.

Broad performance measures are monitored and published by the Independent Oversight and Trending (IOT) Group. Contractually negotiated performance incentives are in place and effectively used to drive behaviors. Electronic systems for monitoring and tracking feedback and improvement issues and action items are in place and appear adequate even though some systems are still being upgraded. The Reactor Programs Self-Assessment Program is implemented and the ATR portion of the self-assessment program is well organized, comprehensive and rigorously managed. There are opportunities for improvement in the execution of the self-assessment programs, specifically in the areas of development of lines-of-inquiry for assessments, and in

assessment schedule compliance. In all areas, there was evidence that deficiencies were identified, corrective action plans were developed and implemented, and the corrective actions were being completed.

DOE-ID action is still in progress to improve areas such as Quality Assurance (QA), DOE-ID Self-Assessment and DOE-ID Issues Management. The DOE-ID OPE Self-Assessment process guidance is provided through the OPE Operational Excellence Program Manual and recently approved DOE-ID directives. There has not yet been sufficient time to demonstrate the execution of this process. While these efforts are not yet completed, the review of documentation, combined with interviews and observations, indicated that the existing DOE-ID TRA feedback and improvement processes were adequately implemented for ATR/ATRC/NMIS.

Issues

- ADOE1-1 The DOE-ID OPE Self-Assessment process guidance is provided through the OPE Operational Excellence Program Manual and recently approved DOE-ID directives. There has not yet been sufficient time to demonstrate the execution of this process.
- AMG1-1 The document management system is heavily loaded as a result of ISMS implementation and is dependent on temporary service sub-contracts. Special management attention is required to ensure that sufficient resources continue to be provided during the change of M&O contractors.
- AOP1-1 The software system used to generate work control packages has been unstable on the contractor's Intranet which causes delays in work package preparation.
- AOP1-2 Environmental requirements, such as categorical exclusions for routine maintenance activities, are not fully integrated into procedures that control work.
- AOP1-3 The TRAMO Roles and Responsibilities (DRAFT) document lacks specificity for the Plan of the Day Chairman and the Self-Assessment Coordinator.
- AOP1-4 A method of institutionalizing JSA hazard controls not appropriate for inclusion within operating procedures needs to be addressed.

Strengths

- ADOE1-2 The positive spirit of the DOE-ID TRA organization to ISMS, their demonstrated teamwork with the TRA contractor personnel, and the strong sense of line management responsibility for safety at TRA are substantial strengths.
- AHAZ1-1 The process used for the requirements flowdown to the facility level is extensive and thorough.

- AHAZ1-2 Employees are actively and aggressively involved in the hazard identification and control process.
- AHAZ1-3 The emergency planning process provides a good example of safety integration because it requires integrating professionals from multiple organizations, actively maintaining interfaces between those organizations and ensuring competency of all personnel involved.
- AHAZ1-4 ATR has a mature and sophisticated program to attract new business and to ensure that new experiments and projects can be accomplished within the reactor's safety parameters.
- AMG1-2 The senior managers are involved in all aspects of the safety management program. They demonstrated an aggressive attitude towards the details of all aspects of the INEEL ISMS.
- AMG1-3 The ATR portion of the Reactor Programs Self-Assessment Program is well organized, comprehensive and rigorously managed.
- AMG1-4 The Senior Supervisory Watch initiated under MCP-3596 provides for significant, immediate feedback and improvement from a senior management level for jobs in progress during the transition to STD-101.
- AMG1-5 The TRA ES&H INFORMATION BOOKLET is a unique feedback mechanism from the training department to the workers to support continuous improvement.
- AMG2-1 Mature, well defined training program exists for operators at the ATR Reactor.
- AOP1-5 TRA management demonstrates a strong commitment to environmental protection and compliance with weekly environmental issues meetings chaired by the Site Area Director.
- ASME2-1 The use of qualified plant/experiments system engineers as primary owners was a real strength of the configuration management process at the ATR/ATRC/NMIS.

INEEL RESEARCH CENTER/TRANSPORTATION COMPLEX (IRC/Big Shop)

The ISMS Verification Team recognizes that Big Shop ISMS implementation has served as a test bed for identifying issues and developing approaches to resolving them that will be useful in implementing ISMS at the balance of the INEEL site. The positive attitude and management attention demonstrated there should serve as the example for continued site implementation. The INEEL Research Center (IRC) represents a distinctly different type of operation from the balance of the site, but ISMS core functions and guiding principles are equally valid to it. There remain challenges to effective implementation of ISMS, both by the contractor and DOE-ID.

Define the Scope of Work

The scope of work at Big Shop is well defined and understood. Active management direction, worker involvement, and planning functions are apparent, as verified by document reviews, observations, and interviews. This results in effective control of the flow of work and provision of services to the site.

At IRC, work is divided into two separate areas; one is related to the operations of the IRC (building and services maintenance) and the other is the conduct of research. There is positive control of work scope and resource allocations associated with building operations through the IFF SAD and Facility Manager functions. However, the execution of ES&H oversight at IRC (a facility management function) could be improved through better definition of SME roles and responsibilities, including better integration of SMEs in the self-assessment process.

Opportunities for research activities are initially identified through preparation of proposals and planning of corresponding experiments by Principle Investigators who respond to defined needs as well as their own initiatives. Selection of specific work to be undertaken is through funding priorities which are ultimately established by funding organizations. Internal priorities are determined on the long term merit of research in meeting the AEDL long range plan initiatives reflecting potential benefits to DOE and other sponsors. This process works well for IRC.

Analyze the Hazards

Procedures at Big Shop are in place and are used to ensure that hazards associated with work are identified and analyzed so that appropriate controls can be established for the safe performance of work. Job safety analyses and Fleet Operations procedures are used for this purpose.

At IRC, building operations activities such as maintenance use work packages prepared in accordance with STD-101 and adequately address the identified hazards.

Research activities at IRC utilize the Independent Hazard Review process to evaluate the hazards associated with proposed research activities. While the process seems to be working well, it could be strengthened with the inclusion of a safety analyst on the review panel and better definition of the facility safety basis used as a basis for approvals that the proposed work is appropriate for the facility.

Develop and Implement Hazard Controls

At Big Shop, most of the work performed is shop work (vehicle repair) and is performed under shop repair orders, prepared in accordance with the provisions of STD-101 as maintenance related tasks. The analysis of hazards and development of controls are based on the hazard analysis matrix approach. Observations, document reviews, and interviews confirmed that this process is adequate and is implemented. It is supported by full-time industrial hygiene and safety professionals as well as fire protection engineering and environmental engineering personnel, as needed.

Idaho Falls Facilities (IFF) maintenance work at the IRC is planned, scheduled, and conducted under the STD-101 process. A hazard profile screening checklist is used to identify appropriate controls and a work team walk-down is performed to validate the appropriateness of the controls. Observations and interviews confirm that safety controls are adequately identified and integrated into the performance of work, and workers actively participate in the process.

At IRC, laboratory custodians and researchers (who may be the same individual) are responsible for assuring that the controls as developed through the IHR process are implemented. Approvals for initiating research activities are contingent on verification by the researcher that the controls specified through the IHRG review have been implemented. This is also verified by the laboratory custodian and by the IRC Facility Manager through spot checks. The use of these mechanisms adequately assures that the controls have been specified and implemented before work begins. Reviews of documentation, observations, and interviews indicate that implementation of these controls is adequate.

Perform Work Within Controls

At Big Shop, ES&H professionals, along with facility management, provide on-going oversight of activities to assure that ES&H requirements are met. Adding to the assurance of Big Shop safety is the positive attitude of the Big Shop staff, who appear to be continually working to improve safety conditions at the facility and in bus operations.

At IRC, researchers work independently and are primarily responsible for performing work within controls. Laboratory custodians, who may be the person conducting the work in any particular laboratory, are responsible for safe operations within their assigned labs. ES&H professionals and the Facility Manager provide oversight, but this could be improved by better identification of ES&H roles and responsibilities and better coordination of their activities.

Provide Feedback and Continuous Improvement

Significant effort is being devoted to conducting self-assessments. Very aggressive day-to-day operational surveillance is exercised. However, documentation of the observations and the results of self assessment at both Big Shop and IRC needs improvement. At IRC, SMEs need to be a more visible and integral part of the self-assessment process. Also, at both Big Shop and IRC, a structured and integrated facility trending program, with clearly identified objectives and goals could improve and refine the self-assessment process.

Issues

- IDOE1-1 DOE-ID procedures and training have not yet incorporated an effective interface with the Planning Preparation Process developed by the contractor in cooperation with DOE-ID to consider ES&H implications of budget reductions in making final budget decisions.
- IDOE1-2 DOE-ID, LD has not completed procedures for their LD Research Excellence Manual to strengthen their involvement with OPE in coordinating effective and

integrated ISMS oversight of IRC operations.

- IDOE1-3 DOE-ID, OPE level of oversight of IRC operations is not comparable to that provided at other INEEL facilities, and OPE and LD need to work together to increase the level and effectiveness as LD develops its Research Excellence Manual procedures.
- IHAZ1-1 A formal definition of what constitutes the IRC Facility Authorization Basis is lacking.
- IMG1-1 Documenting and reporting of all observed deficiencies at Big Shop and IRC does not occur. During assessments and walkthroughs, deficiencies that can be fixed quickly are not documented and reported in compliance with MCP-8.
- IMG1-2 MCP-3735 does not address the roles and responsibilities of SMEs for self-assessment activities at the Big Shop.
- IMG1-3 The roles and responsibilities of the IRC ES&H SMEs need to be documented.
- IMG1-4 The Big Shop and IRC need to improve the trending program for facility level self-assessment.

Strengths

- IDOE1-4 DOE-ID and the contractor have developed a process (Planning Preparation Process) to assure that the impacts of budget reductions on the ES&H infrastructure are understood and considered in making budget decisions.
- IDOE1-5 Both DOE-ID and Big Shop management and staff demonstrated a positive attitude towards implementing ISMS and a strong sense of responsibility for safety.
- IHAZ1-2 The use of the centralized Chemical Storage Facility, along with the INEEL Chemical Management System, at the IRC prevents unneeded buildup of unused chemicals in the various individual laboratories and provides an effective mechanism to ensure the laboratory chemical inventory stays within that assumed in the authorization basis.
- IHAZ1-3 Big Shop staff and management have exceeded requirements to eliminate the majority of hazardous waste streams at the facility by looking for and implementing ways to substitute less hazardous materials in their operations.
- IMG1-5 The cohesiveness and responsiveness of the Big Shop exemplifies the type of worker involvement and team work important in implementing and maintaining effective ISM.

RADIOACTIVE WASTE MANAGEMENT COMPLEX/WASTE EXPERIMENTAL REDUCTION FACILITY (RWMC/WERF)

Both RWMC and WERF have made notable progress in implementing the approved ISMS. The RWMC and WERF organizations have defined clear roles and responsibilities. Managers demonstrate a commitment to ISMS and are responsible and accountable for safety. Facility personnel are competent commensurate with their responsibility. Procedures and mechanisms are in place to ensure that hazards are analyzed; controls are developed; work is formally and appropriately authorized and performed safely; and feedback and improvement programs are in place and effective. Personnel demonstrate a noteworthy sense of pride, teamwork, and accomplishment. However, at RWMC, a lack of rigor and discipline in the execution of written work instructions was judged a breakdown in the ISMS process.

Define the Scope of Work

DOE-ID, including the DOE line organization, systematically translates missions into work, sets expectations, issues written program execution guidance, identifies and prioritizes tasks, and allocates resources within the context of the ISMS. Contractor processes and mechanisms for near-term planning and scheduling which require line management to identify and prioritize mission related tasks have been developed and are in place at RWMC and WERF. These mechanisms and processes flow down from corporate programs and procedures into facility operations and work processes. While some of the mechanisms are only recently implemented, efforts to integrate the implementation are apparent and continued use of these processes and associated feedback mechanisms will produce continued improvements. While the WERF facility was successful at intermediate and long-term planning, the RWMC has difficulty in planning and scheduling of resources beyond several days or weeks.

The scope of work in individual work orders and operational procedures at RWMC and WERF satisfactorily described the intended extent of work to be performed.

Analyze the Hazards

RWMC and WERF have comprehensive procedures, and mechanisms in place to ensure environmental, safety, and health hazards associated with work throughout each facility have been identified and analyzed. Facility level safety analysis programs exist for RWMC and WERF that flow-down DOE and Company-level program requirements. In addition to extensive programs to identify and analyze nuclear, industrial, and occupational safety hazards, mechanisms to identify and analyze environmental hazards are utilized to fulfill the intent of ISMS to fully integrate environment into safety basis documentation, work planning and work execution.

The RWMC Operations Safety Board demonstrated effectiveness in ensuring that proposed activities were consistent with the facility's authorization basis.

The hazards identification processes for operations and maintenance activities defined under STD-101 and MCP-3562 were in place and functional at both RWMC and WERF. However,

most of the operational procedures at WERF had not yet been analyzed under MCP-3562 for hazards, including the primary procedure used for waste incineration.

The DOE-ID line organization guides and oversees the hazard identification, analysis, and categorization process in accordance with DOE requirements.

Develop and Implement Hazard Controls

After the associated hazards have been identified and before work is performed, hazard analyses are used at RWMC and WERF to develop appropriate controls and identify an applicable set of safety standards and requirements. Applicable standards and requirements are used to determine the minimum level of controls that must be in place. Flow down of requirements from the INEL RadCon Manual needs to be completed, and mechanisms for ensuring that responsibility and accountability for requirements that are implemented directly need to be established.

Both RWMC and WERF facility-level implementation activities for STD-101 and MCP-3562 address all aspects of hazard control inherent to these procedures. However, hazard controls selected using STD-101 and MCP-3562 were not consistently integrated into work order and procedure instructions.

Other mechanisms used to develop and implement hazard controls at RWMC and WERF include the facility USQ process, Operational Safety Board review, SME reviews, and post-job reviews. Environmental permit conditions/requirements are utilized as controls that mitigate potential hazards to the environment. The ALARA Program established provides the framework for incorporating controls into work that may involve exposure to radiation and radioactive material. Facility ALARA Committees and ALARA reviews are key features of the ALARA process.

DOE assesses hazard controls and implementation efficacy through oversight by the line organizations and technical support from other DOE-ID organizations.

Perform Work Within Controls

Both WERF and RWMC demonstrated highly effective process controls for confirmation of facility readiness and for authorization of work. Hazard controls, although not fully integrated into operational procedures and work orders, were reliably communicated to operators and craft personnel. With a few specific exceptions, training of employees was adequate to support expected performance levels.

Work execution practices differed noticeably between the two facilities evaluated. WERF operators and crafts performed work in accordance with written instructions and observed the written hazard control requirements faithfully. However, employees and facility management at RWMC displayed a lack of rigor and discipline in the execution of written work instructions. Although five of the six criteria for the operations objective were met at RWMC, the severity of this deficiency represented an unacceptable threat to the ISMS process and worker safety. Accordingly, the operations objective was not met for RWMC.

Provide Feedback and Continuous Improvement

Procedures and mechanisms are in place at both RWMC and WERF to collect feedback information, including self-assessments, independent assessments, post-job reviews, performance measures and indicators, lessons learned, employee safety suggestions and concerns, and occurrence reports. Issues, nonconformances, and deficiencies are included in the ICARE system, where site-wide tracking, closure and lessons-learned development occurs. Management boards at the RWMC (i.e, Corrective Action Working Group) and WERF (Corrective Action Review Board) are very effective. Post-job briefings at RWMC and WERF resulted in useful information for planners and primary owners to use, and suggested changes and comments for improvement of preventative work orders were found to be implemented in subsequent versions.

Both RWMC and WERF employ the Unreviewed Safety Question process to maintain facility authorization basis documentation current. The USQ process utilizes an integrated team effort to ensure comprehensive and objective reviews are performed. All new RWMC activities undergo a RCRA review, in parallel with facility safety reviews.

Development and application of facility level performance metrics is still underway and is an area that will require continued management attention. Development of mechanisms for translating the results of the evaluation and analysis of performance metrics, operational information, and lessons learned into concrete actions at the facility level is another area needing improvement at both RWMC and WERF.

Self-assessment, line-oversight, and independent oversight of INEEL work is conducted by DOE-ID. Issues are managed; trending and analysis is performed; and lessons learned are developed and disseminated. These federal actions enhance safety and strengthen the ISMS by effecting a layered continual improvement cycle.

Issues

- RDOE1-1 ID Order 220.B requires that PAD maintains its independence from the line organizations, including an independent reporting chain, in order to carry out its independent assessment responsibilities. It was found during this review an instance where this independence has not been maintained.
- RDOE1-2 The DOE-ID Independent Assessment program has been provided for previously in ID N 450.A3 and now in the recently approved ID O 220.B. However the execution of a truly independent assessment process has not been demonstrated.
- RMG1-1 RWMC has generally had difficulty performing detailed planning and scheduling beyond several days or weeks.
- RMG1-2 More effective mechanisms and greater focus on trending of facility level feedback and improvement data is needed at both RWMC and WERF.

- RMG2-1 Roles and responsibilities identified in the MOA between WERF and Waste Generator Services organization have not been consistently implemented.
- RMG2-2 Primary Owner positions at RWMC, the Systems Engineers at WERF, and the Technical Support Personnel in general do not have specific qualifications standards formalized to delineate the requirements to occupy the positions they hold.
- ROP1-1 Most of the operational procedures at WERF have not been reviewed under the MCP-3562 process and not all hazards identified were properly mitigated within the procedure for those that had completed the process.
- ROP1-2 RWMC work orders lacked adequate technical direction and integration of hazard mitigation provisions within the work instructions.
- ROP1-3 A lack of rigor and discipline exists at RWMC in the execution of operational procedures and work orders as written.
- RSME1-1 The WROC ALARA Committee, a key element of the ALARA Process defined by LMITCO, has not been holding quarterly meetings as required in their charter.
- RSME1-2 Company-level mechanisms to ensure that personnel were adequately trained and aware of the implementation of revisions to MCP-362 were not successful.
- RSME1-3 Flowdown of the final 82 requirements from the INEL Radiological Control Manual into company procedures is not complete.
- RSME1-4 Mechanisms have not been established to ensure responsibility and accountability for the 230 radiological program requirements that are to be implemented directly (without incorporation into company procedures).

Strengths

- RHAZ1-1 RWMC and WERF have fully integrated environmental permit requirements and conditions into their safety basis, ensuring that many potential environmental hazards are managed during work planning and execution.
- RHAZ1-2 The RWMC Operational Safety Board (OSB) was operated effectively to ensure all safety hazards associated with work planning and execution were identified, evaluated against the safety basis, and controlled.
- RMG1-3 Senior management at RWMC and WERF are clearly involved and engaged in the ISMS process and execution of missions.

- RMG1-4 WERF has very effective integrated planning and scheduling of work that ensures corporate expectations flow through senior facility managers and down to workers.
- RMG1-5 The RWMC Operational Safety Board was observed to be an effective method of assuring that proposed activities are consistent with the facility's authorization basis.
- RMG1-6 The comprehensiveness and structure of the self-assessment programs at both RWMC and WERF are noteworthy.
- RMG1-7 Employee safety teams are actively involved in self-assessment activities and, under the Voluntary Protection Program, initiate, schedule, and conduct assessments.
- RMG1-8 Corrective Actions programs including the RWMC Corrective Actions Working Group and WERF CARB are very effective.
- RMG2-3 Sufficient rigor exists in the WERF apprenticeship program, for the training of operators, which has resulted in approval by the State of Idaho.
- ROP1-4 The observed processes to prioritize, coordinate, allocate resources and authorize work at RWMC and WERF were very effective.